

What is claimed is:

1. A method for solubilizing and recovering, in active and isolated form, a target peptide from a host organism in which the target peptide is present in insoluble form, which comprises:

disrupting the host cell to produce a lysate;

recovering lysate precipitate containing the target peptide;

resuspending the lysate precipitate in a denaturant-free, non-buffered solubilization solution to produce a solubilization preparation that

comprises 1) a concentration of sodium hydroxide between about 8 and about 10 mM and 2) a concentration of polypeptide between about 1 and about 4 mg polypeptide per ml solubilization solution, wherein the resultant solubilization preparation has a pH of between about 9 and about 11.2; and

recovering supernatant from the solubilization preparation containing bioactive target peptide.

2. The method of claim 1, wherein the solubilization solution is substantially free of detergent.

3. The method of claim 1, further comprising the step of purifying the bioactive target peptide.

4. The method of claim 1, wherein the solubilization preparation has a pH of between about 10.5 and about 11.2.

5. The method of claim 1, wherein the solubilization preparation comprises a concentration of sodium hydroxide between about 8.5 and about 9.5 mM.
6. The method of claim 1, wherein the solubilization preparation comprises a concentration of polypeptide between about 2.5 and about 3 mg polypeptide per
5 ml solubilization solution.
7. The method of claim 1, wherein the solubilization solution further comprises a stabilizing compound.
8. The method of claim 7, wherein the stabilizing compound is at concentration between about 1 and about 20 mM.
- 10 9. The method of claim 7, wherein the solubilization solution further comprises a second stabilizing compound.
10. The method of claim 7, wherein the stabilizing compound is a stabilizing sugar, stabilizing polyol, stabilizing amino acid or stabilizing polymer.
11. The method of claim 10, wherein the stabilizing sugar is lactose
- 15 12. The method of claim 7, wherein the host organism is bacteria or yeast.
13. The method of claim 1, wherein the host cell is an Escherichia coli cell or a *Bacillus thuringiensis* cell.

14. The method of claim 13, wherein the host cell is a *Saccharomyces* cell.
15. The method of claim 1, wherein the target peptide is present within the host organism in inclusion bodies
16. The method of claim 1, wherein the target peptide is troponin or a subunit of
5 troponin.
17. A protein produced by the method of claim 1.
18. Troponin produced by the method of claim 16.
19. Troponin I produced by the method of claim 16.
20. A method for formulating target peptide, comprising:
10 (i) dialyzing or ultrafiltering the polypeptide into an aqueous stabilization buffer comprising a stabilizing compound,
(ii) dispensing the target peptide into vials.
21. The method of claim 20, wherein the target peptide is troponin.
22. The method of claim 20, wherein the stabilization buffer comprises buffer salt
15 at concentration between about 5 and 40 mM.
23. The method of claim 20, wherein the stabilizing compound is a sugar or polyol.

24. The method of claim 20, wherein the stabilizing compound is a sugar at concentration between about 2 to 12 mM.
25. The method of claim 20, wherein the stabilizing compound is a polyol at concentration between about 5 to 100 mM.
- 5 26. A method for solubilizing and recovering, in bioactive and isolated form, a target peptide from a host organism in which the target peptide is present in insoluble form, which comprises:
- (a) disrupting the host cell to produce a lysate;
- (b) precipitating said lysate
- 10 (c) recovering lysate precipitate containing the polypeptide
- (d) resuspending the lysate precipitate in a denaturant-free non-buffered solubilization solution to produce a solubilization preparation that comprises
- 15 1) hydrogen chloride at between about 10 and about 20 mM and
- 2) polypeptide at between about 1 and about 4 mg precipitate per ml solubilization solution, and
- 3) pH of between about 2.0 and about 3.0; and
- (d) recovering bioactive the target peptide as supernatant from the solubilization preparation of (c).
27. The method of claim 26, further comprising adjusting the pH of the supernatant
20 to pH 9.5 with NaOH.
28. The method of claim 26, wherein the solubilization solution is free of detergent.

29. The method of claim 26, wherein the solubilization preparation has a pH of between about 2.2 and about 2.8.
30. The method of claim 26, wherein the solubilization preparation comprises a concentration of hydrogen chloride between about 10 and about 20 mM.
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31. The method of claim 26, wherein the solubilization preparation comprises a concentration of polypeptide between about 2.5 and about 3 mg polypeptide per ml solubilization solution.
32. The method of claim 26, wherein the solubilization preparation comprises a concentration of polypeptide between about 1.8 and about 2 mg polypeptide per ml solubilization solution.
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33. The method of claim 26, wherein the solubilization solution further comprises a stabilizing compound.
34. The method of claim 33, wherein the stabilizing compound is at concentration between about 1 and about 20 mM.
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35. The method of claim 33, wherein the solubilization solution further comprises a second stabilizing compound.
36. The method of claim 33, wherein the stabilizing compound is a sugar, polyol, amino acid or polymer.

37. The method of claim 33, wherein the stabilizing compound is mannitol or lactose.
38. The method of claim 26, wherein the host cell is bacteria or yeast.
39. The method of claim 38, wherein the host cell is an Escherichia coli cell or a
5 Bacillus thuringiensis cell.
40. The method of claim 38, wherein the host cell is a Saccharomyces cell.
41. The method of claim 38, wherein the heterologous polypeptide is present within inclusion bodies within the host cell.
42. A method for isolating recombinant proteins comprising:
10 providing a non-buffered solution that comprises a stabilizing compound and hydrogen chloride between about 10 and about 20 mM;
producing a protein solution by adding to the non-buffered solution a recombinant polypeptide between about 1 and about 4 mg polypeptide per ml non-buffered solution, wherein the protein solution has a pH of
15 between about 2.0 and about 3.0;
increasing the pH of the protein solution to between about 4 and 5 using 1N NaOH;
centrifuging the protein solution and recovering precipitate-free supernatant; and
adjusting the pH of the supernatant to between about pH 9 and 10.5 with 1N
20 NaOH
retaining the supernatant comprising isolated target protein at least about

10% more pure than the isolated target protein in aggregate form.

43. A method for isolating recombinant proteins comprising:

providing a non-buffered solution that comprises a stabilizing compound and sodium hydroxide between about 8 and about 10 mM;

- 5 producing a protein solution by adding to the non-buffered solution a recombinant polypeptide between about 1 and about 4 mg polypeptide per ml non-buffered solution, wherein the protein solution has a pH of between about 9 and about 11.2;

lowering the pH of the protein solution to between about 4 and 5 using 1N

10 NaOH;

centrifuging the protein solution and recovering precipitate-free supernatant; and adjusting the pH of the supernatant to between about pH 9 and 10.5 with 1N

NaOH

retaining the supernatant comprising isolated target protein at least about

15 10% more pure than the isolated target protein in aggregate form.

44. A method for preparing bioactive recombinant polypeptide in a chaotrope-

containing solution, comprising:

decreasing the concentration of the chaotropic agent in the chaotrope-containing

20 solution by dialyzing the chaotrope-containing solution against a renaturing buffer of pH between about 9 and about 11.2 and buffer concentration between about 10 and about 50 mM, wherein the renaturing buffer further comprises a stabilizing compound;

chromatographically purifying the protein; and

dialyzing the isolated protein against an aqueous stabilization buffer comprising

a stabilizing compound.

45. The method of claim 44, wherein the stabilizing compound is a sugar or polyol.

46. The method of claim 44, wherein the stabilizing compound is a sugar between about 2 and about 12 mM.

5 47. The method of claim 44, wherein the stabilizing compound is a polyol between about 5 and 100 mM.